

# Methane LIDAR Laser Technology, Phase I

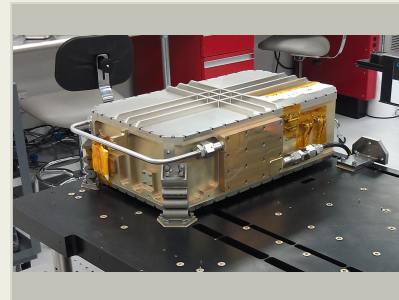
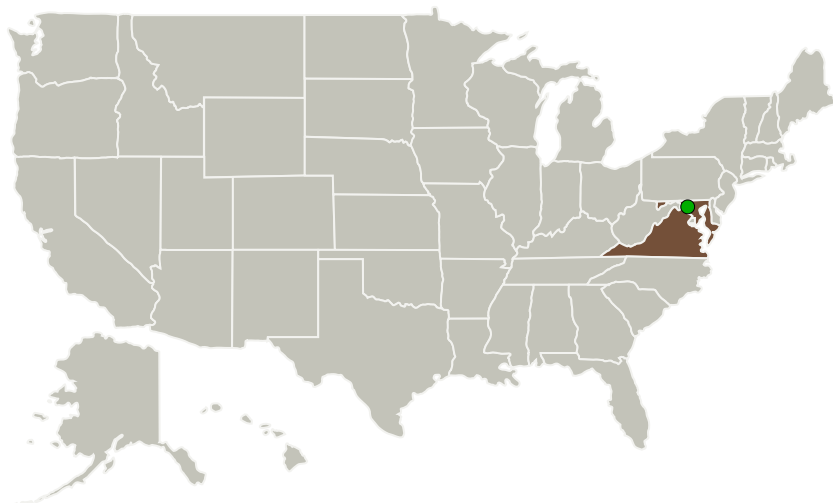
Completed Technology Project (2014 - 2014)



## Project Introduction

Fibertek proposes to develop laser technology intended to meet NASA's need for innovative lidar technologies for atmospheric measurements of methane. NASA and the 2007 NRC Earth Science Decadal Study have identified methane lidar as a key technology needed to address global change research. Under this SBIR opportunity, we propose to develop an injection-seeded Erbium-doped YAG (Er:YAG) laser transmitter for methane lidar that can be used to increase performance of an existing GSFC methane lidar SNR by 20-40 times and enable future International Space Station (ISS) and satellite platform missions. In addition to targeting space flight applications, the technology could also be used for future global hawk (GH) mission. Key innovations of this technology include: \* Average output power >5W at 10kHz pulse repetition rates \* Direct generation of near-transform-limited single-frequency output at a 1.65 $\mu$ m methane absorption wavelength with appropriate linestrength for high-altitude aircraft or spaceflight measurements. \* High reliability and compact size, weight and power (SWaP) \* Potential for high efficiency (4-8% wall plug efficiency)

## Primary U.S. Work Locations and Key Partners



Methane LIDAR Laser  
Technology Project Image

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Organizations Performing Work	Role	Type	Location
Fibertek, Inc.	Lead Organization	Industry	Herndon, Virginia
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

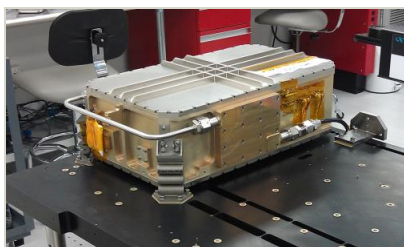
Primary U.S. Work Locations	
Maryland	Virginia

## Project Transitions

**June 2014:** Project Start**December 2014:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140567>)

## Images

**Project Image**

Methane LIDAR Laser Technology

Project Image

(<https://techport.nasa.gov/image/127567>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Fibertek, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

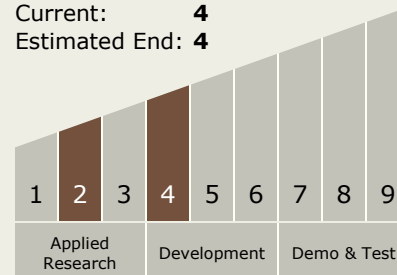
Brian Mathason

## Technology Maturity (TRL)

Start: 2

Current: 4

Estimated End: 4



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## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.5 Lasers

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System